INDEX OF SURGICAL PROGRESS.

GENERAL SURGERY.

I. The Influence of Ventilation Upon the Number of Organisms Floating in the Atmosphere. By DR. R. STERN (Breslau). The author reviews the normal relation of the germs to the atmosphere. These conditions may be summarized as follows:

(1). Except by very strong winds bacteria are never driven off from moist surfaces.

(2). For this reason, only the organisms which are not killed by being dried are found in a living condition suspended in the air.

(3). In general, it is uncommon to find isolated or single organisms in the air. They are usually present in numbers or colonies clustered together upon coarser dust particles.

(4). In still air, because of their higher specific gravity, they quickly gravitate to the surface.

(5). A multiplication of bacteria does not occur in the atmosphere because of the absence of the necessary amount of moisture.

(6). In harmony with the last two facts are the observations of Hesse, Frankland and Petri, namely, that in general the number of organisms present in the air is small. This is especially the case over moist surfaces and in sheltered spaces where the air has been but little agitated.

Bearing in mind these facts, Stern endeavored to arrange his experiments so as to have as nearly normal conditions as possible, but for purposes of accuracy he increased the number of organisms upon which to work to a degree rarely or never found in the air.

A room with four ventilators was selected, two of which brought air to the room and two carried it away. In each case one ventilator for incoming and one for outgoing air were under the ceiling, on opposite walls, the remaining two being just above the floor. By this arrangement diagonal currents from floor to ceiling (summer ventilation) or from ceiling to floor (winter ventilation) could be produced at will.

He then closed all registers, cracks and openings by which air could enter; thoroughly disinfected walls, floor and ceiling with sublimate solution, and analyzed the air for bacteria. None were found.

His next step was, by aid of an atomizer, to completely fill the air with a mixture of dust and bacteria and determine what effect would be produced upon the number of organisms present in the air by—

(1). Allowing the air to be perfectly quiet for a given period of time.

(2). Moderate ventilation (renewal of the whole volume of air 1 to 2 times an hour).

(3). High degree of ventilation (renewal of air 6 to 7 times an hour).

(4). Saturation of the air in the room with aqueous vapor.

His conclusions were as follows:

(*a*). When the air of the room was perfectly still the dust and bacteria sank quickly to the floor.

Where ordinary dust (as from library or school shelves) was employed the air was almost entirely free from bacteria after an interval of one and a half hours.

(*b*). With ordinary ventilation, that is, a renewal of the air 1 to 3 times an hour, the disappearance of organisms from the atmosphere took place hardly more quickly than when the air was allowed to remain still. When "winter ventilation" was employed, the diminution in the number of organisms was slightly hastened.

(*c*). An increase in the degree of ventilation increased gradually the rate of disappearance.

The lowest limit of ventilation which caused an appreciable acceleration in the rate of disappearance of the germs from the air was an exchange of from 6 to 7 times an hour of the whole volume of air in the room.

(*d*). The rapid and complete removal of the germs from the air of a room can be accomplished only by the employment of very strong draughts.

(*e*). No degree of ventilation, however high, was sufficient to cause germs to rise from carpets, furniture, clothing, etc., into the air.

(*f*). Saturation of the air with aqueous vapor is not to be relied upon as a means of depriving the atmosphere of the germs suspended in it It does, however, to a limited extent, accelerate their disappearance.

In consideration of these conclusions Stern feels justified in recommending as a means of disinfecting rooms which have been occupied by persons suffering from infectious diseases, that as soon as the patient has been removed, the room be closed and allowed to remain so for at least 24 hours, after which it is to be quietly entered and floors, wall surfaces and furniture mopped with cloths saturated in corrosive sublimate 1–1000. Under no consideration is dusting to be countenanced.—*Johns Hopkins Hospital Bull.*, 1889, December, from *Zeitschrift f. Hygiene*, bd. 7, hft. 1.

II. **Upon Catgut Infection.** By Dr. C. Brunner (Zurich). The essayist, in opening the discussion upon this subject before the Sixty-second Congress of German Naturalists and Physicians at Heidelberg, quoted the published observations and reports obtained from private correspondence of Zweiffel, v. Volkmann, Kocher, Neuber, Socin, v. Mosetig, Kappeler and Haffter. The observations of all of these surgeons were carried on with carbolized catgut, with the sole exception of Kocher, who, in addition, claimed disturbances of the course of wound healing, attributable to the failure of both juniper oil and corrosive sublimate, in the sterilization of catgut.

In the experimental portion of his work the author of the paper at first tested the condition of catgut derived from manufacturing sources, and found that of these specimens those prepared in sublimate solutions, as well as by Reverdin's dry heat process, were found to be completely sterile, while those prepared with carbolic acid, chromic acid and juniper oil, on the contrary, were capable of serving as means of successful cultivation of both spores and bacteria; among these were observed a non-pathogenic bacillus, which Brunner was not able to identify as belonging to any of the hitherto described forms.

Further the experiments were carried on with the view of determin-